

WHAT IS CLAIMED IS:

1. An optical rod including a plurality of flat plates, each flat plate having a light reflecting surface thereon, which form a tubular body of substantially rectangular cross-section with the surfaces thereof facing inward;

wherein each of the plurality of flat plates is disposed in such a manner that the end surface of one of the flat plates at one end is held in contact with the surface of another of the flat plates adjacent to the same end, and the surface thereof at the other end is held in contact with the end surface of another of the flat plates adjacent to the other end.

2. An optical rod according to Claim 1 wherein each of the plurality of flat plates is disposed in such a manner that the end portion of one of the flat plates at one end extends beyond a rear surface of another of the flat plates adjacent to the same end at the contact portion of each flat plate.

3. An optical rod according to Claim 2 wherein the plurality of flat plates are bonded to each other on the outer surfaces of the tubular body in such a manner that the rear surface of one of the flat plates at one end is bonded to the surface on the extended end portion of another of the flat plates adjacent to the same end.

4. An optical rod according to Claim 1 wherein each of the plurality of flat plates is made of glass, the surfaces thereof having a light reflection coating deposited thereon.

5. An optical rod according to Claim 2 wherein each of the plurality of flat plates is made of glass, the surfaces thereof having a light reflection coating deposited thereon.

6. An optical rod according to Claim 3 wherein each of the plurality of flat plates is made of glass, the surfaces thereof having a light reflection coating deposited thereon.

7. An optical rod according to Claim 1 wherein each of the plurality of flat plates is polished only on the end surface at one end.

8. An optical rod according to Claim 2 wherein each of the plurality of flat plates is polished only on the end surface at one end.

9. An optical rod according to Claim 3 wherein each of the plurality of flat plates is polished only on the end surface at one end.

10. An optical rod according to Claim 4 wherein each of the plurality of flat plates is polished only on the end surface at one end.

11. A manufacturing method of an optical rod which is formed into a tubular body having a substantially rectangular cross-section with a plurality of flat plates each having a light reflecting surface, with the surfaces facing inward, the manufacturing method including a securing step for securing each of the plurality of flat plates in such a manner that the end surface of one of the flat plates at one end is secured in contact with the surface of another of the flat plates adjacent to the same end and the surface thereof at the other end is secured in contact with the end surface of another of the flat plates adjacent to the other end.

12. The manufacturing method of an optical rod according to Claim 11 wherein each of the plurality of flat plates is disposed in such a manner that the end portion of one of the flat plates at one end extends beyond a rear surface of another of the flat plates adjacent to the same end at the contact portion of each flat plate.

13. The manufacturing method of an optical rod according to Claim 11 further including a bonding step wherein the plurality of flat plates are bonded to each other on the outer surfaces of the tubular body in such a manner that the rear surface of one of the flat plates at one end is bonded to the surface on the extended end portion of another of the flat plates adjacent to the same end.

14. The manufacturing method of an optical rod according to Claim 11 wherein each of the plurality of flat plates is made of glass subjected to a deposition process, the manufacturing method further including a deposition step for depositing a light reflection coating on the main surfaces thereof.

15. The manufacturing method of an optical rod according to Claim 11 further including a polishing step wherein each of the plurality of flat plates is polished only on an end surface at the one end.

16. The manufacturing method of an optical rod according to Claim 11 further including:

a core expansion step wherein a core is expanded by inserting spacers into gaps formed between inner side surfaces of a plurality of cores so that the outer surfaces thereof may form a post having a substantially rectangular cross-section; a flat plate disposition process wherein the surfaces of the flat plates are set on the outer side surfaces of the post having the substantially rectangular cross-section;

a core reduction process wherein the cores are reduced by removing the spacers after forming the tubular body; and

a tubular body removal process for removing the tubular body when the cores are reduced.

17. The manufacturing method of an optical rod according

to Claim 16 further including a flat plate suction process for holding the flat plates on the outer side surfaces of the post of substantially rectangular cross-section by suction.

18. The manufacturing method of an optical rod according to Claim 16 further including an air blowing process for blowing air onto the surfaces of the flat plates after forming the tubular body.

19. A manufacturing jig for manufacturing an optical rod comprising a plurality of flat plates, each flat plate having a light reflecting surface, to form a tubular body of substantially rectangular cross-section with the surfaces facing inward, the manufacturing jig comprising:

a plurality of substantially polygonal posts;

spacers insertable between the plurality of substantially polygonal posts;

the plurality of substantially polygonal posts being connected by the spacers so as to form a post of substantially rectangular cross-section.

20. A projector comprising:

an illumination light source system including a light source and means for making uniform the irradiation of light emitted from the light source;

a color separation optical system for separating the light emitted from the illumination light source system into

specified colored light beams;

a light modulating device for modulating each colored light beam emitted from the color separation optical system according to image information; and

a projector lens for projecting the light beams modulated by the light modulating device,

wherein the means for making the light irradiation uniform is the optical rod as described in Claim 1.